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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,685	09/30/2004	Greg A. Hanlon	PES-0220	5684
23462	7590	07/10/2006	EXAMINER	
CANTOR COLBURN, LLP - PROTON			LEE, CYNTHIA K	
55 GRIFFIN ROAD SOUTH			ART UNIT	
BLOOMFIELD, CT 06002			PAPER NUMBER	
			1745	

DATE MAILED: 07/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/711,685	Applicant(s) HANLON ET AL.	
	Examiner Cynthia Lee	Art Unit 1745	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/15/2006</u> | 6) <input type="checkbox"/> Other: _____  |

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/27/2006 has been entered.

**DETAILED ACTION**

This Office Action is responsive to the amendment filed on 4/27/2006. Claim 23 has been added and thus, claims 1-23 are pending. Claims 1, 13, and 20 have been amended. Applicant's arguments have been considered and are persuasive. Thus, the 102 rejection has been withdrawn. However, claims 1-23 are newly rejected for reasons of record stated herein below.

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 and 2 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1,6,7 of copending Application No. 10985633. Although the conflicting claims are not identical, they are not patentably distinct from each other. Claim 1 of the instant application and claims 1,6, 7 of the copending application claim a bipolar plate wherein the first side comprises a fluid flow region in communication with a first set of ports; the second side comprises a fluid flow region in communication with a second set of ports, and another layer in between the first and second side comprising first set of fluid flow channels in communication with the first fluid flow region and second set of fluid flow channels in communication with the second fluid flow region. The copending application does not disclose the orientation of the fluid flow region to be in different directions. However, it is obvious because is well known in the art to orient the two flow regions in different directions or 90 degrees from each other (see Ellwood et. al. (US 2006/0014057)). Therefore, claim 1 of the instant application fully encompasses claims 1,6,7 in the copending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Specification***

The amendment filed 4/27/2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The specification as

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originally filed is silent as to the limitations "wherein each of the first, second, and third layers are distinguishable from each other and capable of being made from a different material" and all layers being "metallurgically bonded together to define a first (or a second) bond line that encompasses the first (or second) plurality of channels, the first (or second) inlet port, and first (or second) outlet port" as amended.

Applicant is required to cancel the new matter in the reply to this Office Action.

***Claim Rejections - 35 USC § 112***

Claims 1-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification as originally filed is silent as to the limitations "wherein each of the first, second, and third layers are distinguishable from each other and capable of being made from a different material" and all layers being "metallurgically bonded together to define a first (or a second) bond line that encompasses the first (or second) plurality of channels, the first (or second) inlet port, and first (or second) outlet port" as amended.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Applicant is requested to make the record clear

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whether “a first through-hole channel” and “a second through-hole channel” in claim 8 refer to “a first plurality of through-hole channels” and “a second plurality of through-hole channels” in claim 1.

### ***Claims Analysis***

Regarding claims 17 and 21, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, the diffusion bonding, metallurgically bonded, and lamination of the bipolar plates has been considered but was not given patentable weight. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

The amendment recites that the layers are “distinguishable from each other and capable of being made from a different material.” It has been held that recitation that an element is “capable of” performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

The examiner has interpreted the term “through channel” to mean “the presence of a slot or a hole that is made in the respective part (layer)” as disclosed in the specification (para. 28).

### ***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8-13, 16-23 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Spear (US 6051331).

Spear discloses a bipolar plate made of several layers. A bipolar plate comprises a first layer (30-3), a second layer (30-5), and a third layer (30-4). The layers are bonded to each other (1:16) and a gasket is located on each end of the bipolar plate that seals the active area (applicant's claim 18). See Fig. 4. Thus, the bonding of the layers creates a bond line between each layer (applicant's claims 1, 13, and 20).

The first layer has a first plurality of channels oriented horizontally (Fig. 9) and vertically. The second layer has a second plurality of channels oriented horizontally (Fig. 9) and vertically. Thus, they are oriented 90 degrees from each other. An alternating arrangement of the MEA and bipolar plate comprise a fuel cell (claims 13 and 20).

The third layer has channels 18A and 78 (Fig. 8A) that are in fluid communication with the plurality of channels (12:15-67). Further, there are inlet (12 and 16) and outlet ports (18 and 34, Fig. 5) in fluid communication with the header channels (12, 16, 18A and 78, see fig. 8A). The header channels extend over an opposing end of the plurality of channels (applicant's claim 23). The inlets and outlets are diagonal from each other (applicant's claim 3).

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The third layer necessarily prevents fluid communication between the first plurality and second plurality of channels because the reactant gases in the first plurality and second plurality of channels do not mix (claims 1, 13, and 20).

The plates are made from bonded titanium or stainless steel (1:10-20) (applicant's claim 12 and 22).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4,5, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spear (US 6051331) as applied to appropriate claims above, and further in view of Wilson (US 2004/0197630).

Spear discloses that each plate is about 20 mils thick (5:50).

Spear does not disclose the dimensions of the channels. However, Wilson discloses a bipolar plate with a channel width of 0.8 mm and depth of 0.25 mm (0031; 0033, lines 5-6), thus clearly teaching that the groove dimensions are result effective variables. It has been held by the courts that discovering an optimum value or workable ranges of a result-effective variable involves only routine skill in the art, and thus not novel. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See MPEP 2144.05. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the grooves on Spear's bipolar plates with the groove



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dimensions for the purposes of fine tuning the pressure drop of the reactant gases and improving the overall performance of the plate, as taught by Wilson (0031 lines 4-6; 0032 lines 5-8).

Claims 6,7,15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spear (US 6051331) as applied to appropriate claims above, and further in view of Toshihiro (JP 05-251097).

Toshihiro discloses a bipolar plate wherein the plate comprises grooves of different lengths, in which an upstream portion of a first side of the plate has one width and a downstream portion of the first side has a second width (fig. 1). This configuration was designed by Toshihiro so that the stay of condensed water in the gas channel grooves in the bipolar plate can be eliminated to eject the water quickly (abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Spear's grooves with two of Toshihiro's bipolar plate facing back to back of each other wherein the larger width of the two widths on the first side is greater than the smaller width on the second side. The motivation would be for the purpose of improving condensed water elimination, as taught by Toshihiro.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-23 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Lee whose telephone number is 571-272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ckl

Cynthia Lee

Patent Examiner



**PATRICK JOSEPH RYAN**  
**SUPERVISORY PATENT EXAMINER**